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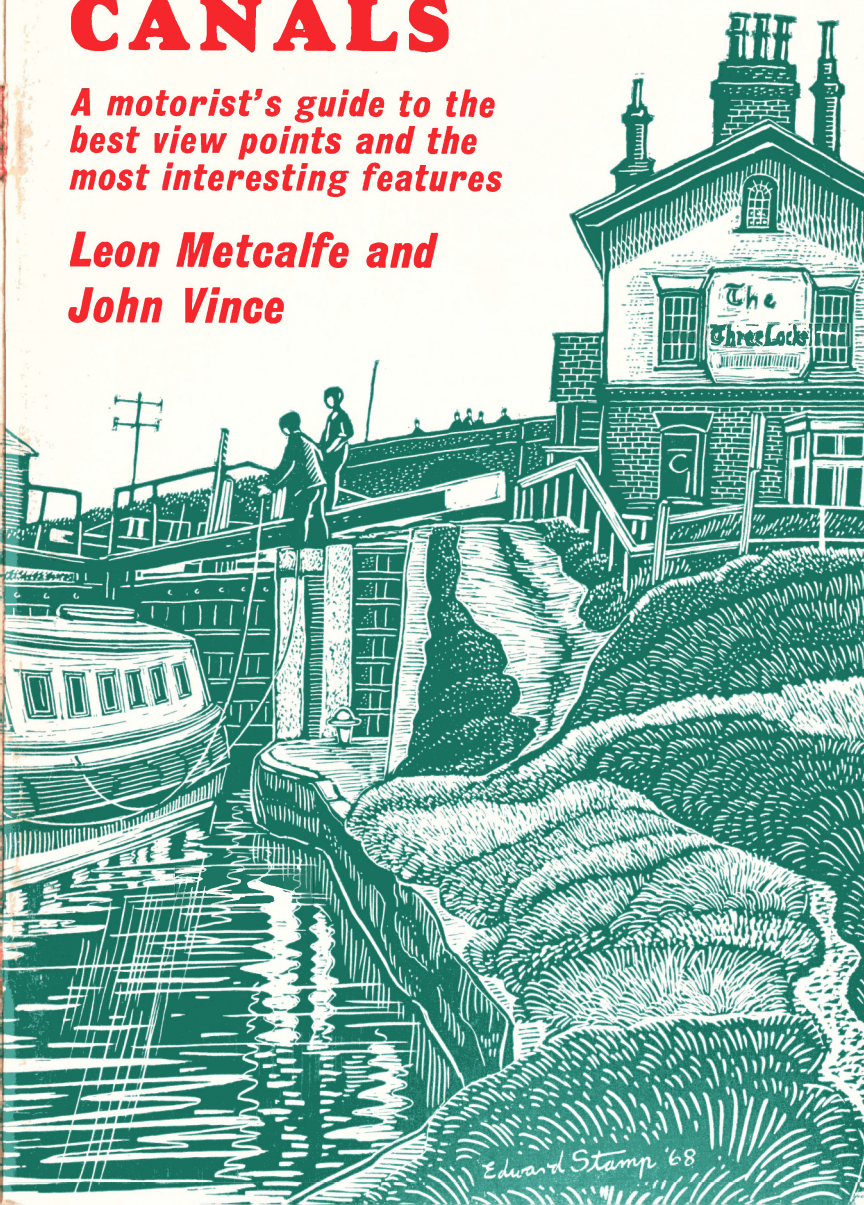
Discovering CANALS

A motorist's guide to the best view points and the most interesting features

Leon Metcalfe and John Vince



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Discovering CANALS

A guide for the motorist

Leon Metcalfe
and
John Vince

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First published August 1968
Revised August 1970

SBN 85263043 3

Shire Publications, Tring, Herts.

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INTRODUCTION

To the frustrated motorist sweating in the fumes of a traffic jam a canal will no doubt seem a remote symbol of quiet coolness.

This book is dedicated to all those motorists who have seethed or suffered and yearn to exchange tumult for tranquillity —even if it is only for a Saturday afternoon.

Those who seek out the hundred or so places mentioned here will find a great deal to enjoy in England's rich countryside. To some people canals are undiluted nostalgia—frequented by horse-drawn barges; or, if they have ever dipped into *The Wind in the Willows,* by an erring Toad fleeing from the consequences of his foolhardy motoring!

The canals of England however have a very special importance. In times when roads were abominable—and it took two days to go the 115 miles from Bristol to London—canals provided a significant addition to our inland communications. They appeared on the English scene in their present form in the eighteenth century when what we call the Industrial Revolution had begun to creak into motion. In those days canals supplied a relatively rapid method of transporting goods or passengers from place to place. They multiplied at a rapid rate in the latter part of the century and spun a web of water across the landscape. The Midlands provided the focus of the canal system and an important network around Birmingham joined together the waterways that converged around its periphery.

England's oldest canal is probably the Fossdyke Canal which dates from the days of the Roman Hadrian (second century A.D.) and was widened by Henry I a millennium later. Linking Lincoln with the Trent it was improved in the eighteenth century but in common with most canals its fortunes declined when the iron sinews of the railway extended and captured its trade less than a century later.

Academic historians may debate the decline and fall of the English canal system, but the country lover may stand aside and enjoy canals for what they are. When man matched the ways of nature and carved the landscape to his own liking for his own ends the face of England was altered—and sometimes in the most dramatic manner. All over the country today we can still see and enjoy the engineering triumphs of the canal age—the embankments, tunnels, bridges, reservoirs and aqueducts. In their time they were more wonderful than a

motorway is to us today. Like motorways they had their critics, and the curious bends which sometimes occur in their courses derive simply from a powerful landowner's prejudice.

The embankments were created, in the days before mechanical aids, by the bent back of the navigator. These rough and ready itinerant Irish gave us the word navvy.

How much canals add to the landscape depends partly on who is doing the viewing. Looking at landscape is a personal experience, and one man's favourite prospect will fill another with despair.

Some will value canals for their flatness and the bobbing craft with their variegated crews in summer sunshine. Others will savour the unhurried ascent of a boat on a flight of locks—it takes about 90 minutes to climb the 10 locks and 75 feet of the Foxton Flight on the Grand Union. Even the disused waterways have their interest. Reservoirs—like the one by the Wendover Arm—can provide a perfect habitat for certain birds and for the fisherman.

In the following chapter some of the principal features to be found along English canals are described.

CANAL FEATURES

BRIDGES: There are many bridges which carry busy roads across canals and many motorists who have been mislead by the relatively uninteresting fabric which is all the motorist can glimpse as he hurries on his way. Most canal bridges were designed to be looked at from the canal and to gain the best view we must go down to the towpath. In certain places the bridges are painted black and white and in others the natural colour of the masonry is allowed to dictate their appearance. On the towpath side of a bridge the corner of the soffit is protected with an iron band which once prevented the towrope wearing into the masonry. Grooves in the ironwork show just how deep a rough rope could bite. At Bordesley Junction, Birmingham, even the iron balustrade of the bridge crossing the towpath is deeply scored in this manner.

Canal bridges present two distinct types of profile: the straight topped and the rainbow shaped. The level parapet is often found where an original hump back bridge has been replaced by a wider and flatter structure carrying a busy roadway. The narrow hump back bridge is a hazard for the unwary motorist and they should always be approached with

caution. Some bridges date back 200 years. Simplicity of design and the craftsmanship which went into their making have enabled them to endure. A good many such bridges—like those on the old Wilts and Berks Canal—still stand but their impeccable masonry may now span a waterless bed. Canals without water are not necessarily without interest. Along the Wendover Arm (Grand Union) for instance the rare sponge fly was recently found by an entomologist who had searched another known habitat for a specimen for some five years without success. We should not wonder at the narrowness of the canal bridge. It was designed in an age when traffic was a fraction of its present day volume. Bridges joining field with field saw very little wheeled traffic except in haytime and harvest. They are wide enough for farm wagons in single file.

Another interesting type of structure is the split bridge which has a small space at its apex to allow a towrope to be slipped through. This arrangement was a very useful one when the towpath roved from one bank to the other, for the horse did not have to be unhitched.

Not all canal bridges are fixed structures and along some stretches—e.g. the Oxford Canal—wooden bascule bridges may be found. These can be raised and lowered like a mediaeval castle drawbridge, and they have doubtless given pleasure to many canal children down the years. Along the Llangollen Canal the lift bridges have stout counterbalance beams which help to give them a surprisingly continental look. Van Gogh's well known painting of "The Drawbridge" at Arles shows this type of bridge to perfection.

An alternative to a lift bridge is a swing bridge. This can be operated from one bank or from the centre of the waterway if space allows. Examples of the former kind can be found along the Macclesfield Canal, and the best specimen of the latter is the 1500 ton Barton Swing Aqueductsituated on the Manchester Ship Canal.

A rare and curious arrangement of bridges can be seen where road, rail and canal cross at the same point. This happens at two places along the Grand Union. At Three Bridges, Southall, the B358 road crosses the canal and the main Western Region railway burrows below it. Near Salford Junction, Birmingham, one of the locks on the Camp Hill flight is bridged simultaneously by a road bridge which is surmounted by a rail bridge.

Where the A519 crosses the Shropshire Union Canal we can see the very unusual High Bridge with its peculiar internal buttress which forms an inverted arch. Apart from a similar design, used in the older tower crossing at Wells Cathedral, there is nothing quite like it to be seen in England.

AQUEDUCTS: There are many places (about 276) where a waterway needs to cross road, rail or river. Not all aqueducts are equally impressive, and those which so often find their way into magazines are naturally chosen for their scenic qualities. The most dramatic must be Thomas Telford's magnificent Pontcysyllte Aqueduct (Llangollen Canal) which strides, on eighteen legs, across the Dee. Even the Romans, masters of the art, would have applauded its qualities. This monument to Telford's skill has been in use since 1805 and its future is now assured as it has been scheduled as an ancient monument. Others play a humbler part and peep round gentle but remote corners in the countryside or perhaps cross roads so busy—like the Stretton Aqueduct on the A5—that no one has time to stop and stare. Aqueducts do not have to be immense to be impressive. On the Lancaster Canal the Wyre Aqueduct cannot claim to be large, but it is none the less an imposing piece of engineering with its single majestic span. This canal is rich in aqueducts and the one over the Lune is older than Telford's mentioned above and its five arches have a grace all their own.

Among the iron aqueducts we should include Wolverton (Grand Union). This structure, built in 1811, replaced the original which collapsed three years earlier. The locations of the locks which carried the canal across the Ouse Valley before the first aqueduct was installed can still be traced. They were re-used when misfortune overtook the first aqueduct in 1808.

TUNNELS: Today we tend to take the use of power tools very much for granted, and it is not always easy to appreciate just how difficult life could be for the men who carved out the English canals. Hills were major obstacles to the canal engineer, and Blisworth Hill divided its canal (Grand Union) into two parts for several years before it succumbed to the pick and shovel. Before the 3075 yard tunnel was opened the two sections of canal were linked by a tramway, and the task of unloading and reloading must have been a tedious business for the hard worked bargees. Blisworth tunnel is now the longest tunnel still in use on an English canal. Standedge tunnel on the closed Huddersfield Narrow Canal is 3 miles 135 yards long. At Fenny Compton (Oxford Canal) the tunnel was opened up a century ago—1868—but the name lingers on.

LOCKS: One of man's most ingenious inventions is the pound lock which replaced the primitive single gate of the flash lock. The method of using two gates to separate different levels of water is very effective. One of the joys of canal watching is to see boats moving up and down a 'staircase' or flight of locks. Throughout the canal system there are many flights, and a good many are in attractive scenic settings. A row of five locks is

not an uncommon sight, but the 23 Wigan Locks (Leeds and Liverpool Canal) which rise 250 feet in a distance of about 2½ miles can be classed as unusual. They are not quite unique however—the Tardebigge Flight (Worcester and Birmingham Canal) has 30 locks which rise 217 feet in almost the same distance. The passage of a boat through a lock must be an unhurried operation. There are 10 locks on the Foxton Flight (Grand Union Canal) and they take about 1½ hours to negotiate in normal conditions.

Flights of locks provide special problems for the canal engineer. Each pound (the space between the locks) needs an adequate supply of water and to ensure that locks do not run dry a staircase is provided with a series of side ponds. These also allow boats to pass one another, see photograph of the ponds on the Devizes Flight of the disused Kennet and Avon Canal. Some canals have locks with single gates and on others pairs of mitre-gates are used. Locks can also be found arranged in pairs side by side. Where this occurs boats may pass upwards and downwards at the same time. An interesting point to look for when you visit a lock is its date of construction. This information will usually be found carved somewhere in the masonry. Another feature which may also appear is the lock keeper's name. In the old days these were displayed on cast iron plates.

RESERVOIRS: Canals use immense quantities of water and the early engineers took good care to provide adequate reserves. Reservoirs are not always situated within sight of the canals they supply, but they are not, of course, too far away. When a canal crosses a hillside the water to supply the top level may have to be pumped up from below—if there is no high level source available. The canal engineer's dream of vast stretches of level water seldom occurs in these islands, although there are a few long levels—like the 16 miles from Bosley Locks to Whaley Bridge (Macclesfield Canal).

Dotted round the landscape are many reservoirs with austere pumping houses and cottages for their attendants. Some still contain ancient machinery and fittings—like those at Claverton and Crofton (Kennet and Avon).

With the passing centuries these man made lakes have matured and moulded themselves into the landscape. They now provide more than water for the canals. They have become an important amenity and can supply facilities for sailing, fishing, boating and picnics. Another significant contribution they make is in the field of ornithology—e.g. Marsworth reservoir by the Grand Union Canal. In the rich foliage around their edges the naturalist will also find much to attract his attention.

IRONWORK: English canals grew up in an age when cast

iron was changing the techniques of industrial manufacture. Naturally enough this new material was employed in various ways along our canals.

Canal revenue was derived from the tolls it obtained from the passage of traffic. Rates were calculated on a mileage basis and cast iron mileposts were erected at regular intervals to help both the tollkeeper and the bargees. Bollards to protect the corners of buildings and bridges were all suitable products for the foundryman. On the locks the paddles were operated by cast iron gears working on cast iron racks. Whole locks too were sometimes constructed of cast iron sections. Many examples of ironwork along our canals bear a maker's name and the early products of our industrial age are now recognised as valuable relics by the industrial archaeologist. It may take sharp eyes to track down a maker's name but on large structures it usually appears in a prominent position.

ARCHITECTURE: The canal bank has attracted buildings of many kinds and their architectural styles and details will depend upon the building date and where they are situated. Canal buildings may represent typical characteristics of the locality or they may show distinct signs of imported ideas from other regions. Certain buildings were intended exclusively for canal use. In this class we should place tollhouses—often octagonal in plan, pump houses and the ancillary buildings like warehouses and the offices at principal terminals.

The many and various 'Navigation' and 'Barge' inns help to remind us of the part they played in the life of the hard working bargee. The inn was in fact an important means of communication for the waterway folk. If misfortune—like the loss of the bargehorse—visited one of their fellows the innkeeper not only passed on the news but frequently acted as banker to the relief fund. Larger inns always provided shelter for the horse which along with his wife and his boat made up the bargee's most valuable possessions. A good many stables still survive, tucked away in odd corners, although they will now serve quite a different purpose.

The style of buildings along any given canal may have certain common features and it is interesting to work out what these are. Cast iron was also used for window frames and standard sized windows in cottage or tollhouse may help to confirm the idea that they were the work of the canal company. Identical chimney pots or roofing tiles around a lock can also suggest to the informed eye that they came into being, or were reroofed, at the same time. One of the satisfying things about canal architecture is the impression of unity one gets from its arrangement around a lock or basin. All the parts fit together in a functional

harmony that always seems to blend perfectly with the surrounding landscape. The Civic Amenities Act 1967 allowed planning authorities to look at groups of buildings as a unity and the provision this act makes for the establishment of conservation areas is an important step forward towards the informed preservation of our scenic assets. One of the dangers along a disused waterway is that some attractive or perhaps technically significant buildings may be swept aside in the course of new development. There are sound reasons why the various canal protection societies should also consider the buildings along their waterways ; and perhaps ensure that the best of them are given legal protection where it does not already exist by being made part of a conservation area—Civic Amenities Act 1967 Cap. 69, Part I, Sect. 1-7.

THE KENNET & AVON CANAL

The Kennet and Avon Canal, as the name suggests, was a waterway designed to link the River Avon, serving the West country through Bath and Bristol, and the Kennet, flowing eastwards into the Thames at Reading. Before the building of the canal in 1799 by John Rennie, the rivers were used for the transportation of materials to the ports and major towns of Bath and Bristol via the Avon Navigation, and to Reading and London via the Kennet and the Thames. The opening of the canal was to link the east and west coasts, thus facilitating easier communication with the ports from the comparatively isolated inland areas, and also avoiding the necessity of a long sea journey, under the vagaries of sail, round the coast between London and Bristol.

One would have thought that this proposed canal would have been welcomed and accepted by all, especially the people who lived and worked close to the proposed course of the new waterway. This, however, was not always so. The watermill at this time was an important source of power which was used to grind corn, power forges and help in the production of cloth, and mills were built on every suitable stream and river. With the coming of the canal, the millers became very worried that this new means of transport was going to disturb and alter the flow and level of the water in their streams, thus affecting the only source of power available to them. Their fears were so great that efforts were made by the millers to stop the canal being cut. Groups of millers and their workers attempted to damage locks and equipment belonging to the Canal Company, and many fights ensued between millers and navvies.

LOCATION: Claverton water wheel and ram.
APPROACH: Take the A.36 Bath to Warminster Road and 3½ miles from Bath turn left on to the minor road which passes over the canal bridge. Park on the left by the canal. At this point there is a gap in the hedge which leads up on to the canal embankment. Turn right along the towpath and in a short distance the conduit from the River Avon below, via the pump, will be seen entering the canal. The railway separates the pump house from Mill Cottage by the canal, on the other side of the pump house is the River Avon. A water mill existed on this site before 1810 when the canal pumps were installed. The River Avon at this point has had a mill stream cut across one of its meanders, and it is this water which powers the pump.

The water enters the pump house after passing through sluices and two sets of meshes, to hold back debris which may harm the wheel. It then flows over a wooden, adjustable threshold which directs the water onto the underthrow paddles of the wheel. As the wheel is turned so it actuates a pump of the beam engine type similar to those used in the Cornish mines. The drive is through a square shaft on which are situated the massive fly wheel, and the pump wheel with its wooden teeth. The water is then forced up to the canal, over forty feet above. (The beams for this pump are so large that they had to be cast on the site.)

At present this unique piece of machinery is not in working order but Bath College of Technology is engaged in restoring it. As all money required for this work has to be found from donations, restoration is not expected to be completed until about 1973. It is the oldest and last remaining pump of its type in the country.

Permission is required before this pump can be visited, but it is well worth the effort. Write to the Area Engineer, British Waterways Board, Dock Office, Gloucester.

LOCATION: Dundas aqueduct.
APPROACH: Leave Bath on the A.36 towards Warminster. In about 5 miles a signpost indicating a road to the right reads, "½ mile Monkton Combe". At this point there is a large lay-by on the left of the road; park here.

At the southern end of the lay-by will be found a Public Footpath. Follow this track for 150 yards down to the canal. On the left, as you approach the canal wharf, notice the keeper's cottage. Immediately beyond this at the edge of the wharf one can see an old Bristol-made winch, the maker's name still attached to it. Beyond this is a warehouse and a footbridge. While passing over the bridge, stop and look each way along the

canal. Back towards Bath the canal runs straight and true, but after passing under the bridge the canal prepares itself for a violent, almost ninety degrees, turn to the left to take it over the River Avon.

Under the footbridge on the Bath side is a pair of stop gates, and under the other side the stop planks and slots are situated. Both these devices are used on canals where burst banks could mean loss of life, livestock, crops or the canal's water. They enable sections of the canal to be sealed off in such times, so that water loss is kept to a minimum. A similar arrangement will be noticed at the other end of the aqueduct where the canal resumes its straight course.

Dundas aqueduct is a fine broad watercourse made of Bath stone and designed by the Canal's engineer, John Rennie. As you walk along the aqueduct notice the builder's marks on the stone parapet; they are finely cut and very intriguing.

The full beauty of the aqueduct cannot be appreciated from the canal itself, so it is necessary to climb down the rather steep path towards the Rowing Club on the north side. From here can be seen the full sweep of the aqueduct with its beautifully proportioned arches. The plaque with its inscription is just capable of being read. but a pair of binoculars would be an asset. Make a mental note of the condition of this north side. To view the south side a flight of steps will take you down to the river. You will no doubt be surprised at the superior condition of this face which can only be attributed to the fact that it is sheltered from the prevailing winds. There is another inscription above the centre arch on this southern side.

Continue walking along the towpath. Beyond the aqueduct the canal again makes a sharp right turn in order to resume its original direction. Having rounded the bend, one can see the second pair of stop gates and also another cottage.

Other notable aqueducts on the canal are situated at Avoncliffe, Biss and Semington. The last two take the canal across the River Biss by means of embankments and stone aqueducts with spans of 30 feet. The centre spans of Dundas and Avoncliffe are approximately 60 feet.

LOCATION: Devizes—flight of 29 locks.

APPROACH: Leave Devizes on the A.361 in the Seend, Trowbridge direction. On the outskirts of the town the road crosses the canal. Once over the bridge parking is available along the road, with the canal on the right.

Access is gained to the towpath by means of a stile near the bridge. Walk up towards the bridge noticing the inscribed plaque by the centre arch. After passing under the bridge the top

locks of this huge flight will soon be observed. From this point to the foot of the flight of 29 locks, a fall of nearly 240 feet is achieved in a distance of just over 2 miles.

From the stile in a westerly direction the majority of the locks in the flight are situated, and many of them can be seen falling away towards the River Avon in the vale below. This is a very pleasant and rewarding walk as there is much to see. The first impression will no doubt be of sadness that such a once magnificent flight has been allowed to deteriorate to its present state. The side ponds, which were necessary with such a short distance between locks, are plainly visible though now often used for grazing. The Junior Division of the Kennet and Avon Canal Trust have removed some of the rotted lock gates and cleared undergrowth from the canal bed.

The locks afford an opportunity not usually available on a canal which is fully operational. The water level is so low that almost the entire working parts of the gates, sluices and sills are clearly visible for study.

LOCATION: Crofton locks and pumps.

APPROACH: Leave Marlborough on the A.346 southwards. After 4½ miles cross the canal bridge and in 2 miles turn left in Burbage on the road to Free Warren. At this point the road crosses the canal and the locks can be seen on the left. The road runs parallel with, and between the canal and the railway for nearly half a mile on the Crofton road. Where the road leaves the canal to cross the railway, there is a lock. At this point Wilton Water, a pleasant stretch of water, is situated on the opposite side of the canal. The summit level of the canal receives its water from here by pumping and from 1810 to 1958 this was done by a pair of James Watt Condensing Beam engines, believed to be, in 1958, the oldest working steam engines in the world. Regular pumping has since been undertaken by electricity. The Crofton Pumps have been acquired by the Kennet and Avon Canal Trust and have been restored to working order, though only steamed from time to time. Open to the public every Sunday. Further information from The Secretary, The Coppice, Elm Lane, Lower Earley, Reading.

THE GRAND UNION CANAL (FORMERLY THE GRAND JUNCTION)

The Midlands, the heart of industrial Britain, was well served with a cheap, and for those times an easy, transport system by means of canals. It was decided in 1791 to speed up the carrying

of goods to London by cutting a new canal, the Grand Junction. Prior to this date the Oxford Canal had served this purpose as far as Oxford and then the River Thames through to the capital.

At first one might think that this system using the Thames would be quite satisfactory, but in fact it was fraught with difficulties. On the Oxford Canal goods were moved with ease, as they should be on a waterway designed for the purpose. The story was different when the Thames was reached. Moving goods downstream with the help of the current was easy until a mill was reached. There were, of course, many watermills on the river during the eighteenth century. The miller's life depended on the head of water to turn his mill wheel and he often refused the passage of barges passing down the river, until there was sufficient water to allow them to pass without it affecting the power for his mill. At the same time he would exact exhorbitant fees on the barge owner for the passage of the craft. High fees were also charged by the many and varied owners of land along the river side for the use of the towing path. On the return journey similar hazards were encountered. Added to these was the fact that the force of the stream was now against the passage of the barges, thus delaying them further.

From this we can see that any new canal which could avoid high tolls, provide a more direct and free passage, and which did not have the disadvantage of a strong current against the barges on their return to the Midlands, would be welcome.

In 1792 Barnes, later the resident engineer, surveyed the new canal from Braunston, the junction with the Oxford Canal, to London. Jessop, brought in at a later date in charge of construction, slightly altered the line Barnes had chosen from Watford to Brentford and took the canal into London via Uxbridge. Even at this stage the engineers realised that their biggest problems were in the Blisworth and Braunston areas and we shall find out more about these feats of engineering in the itinerary.

Finally a note about Mr. Barnes, the engineer, or Old Barnes, as he was usually called. He was a Banbury man with little education, but nevertheless strong willed and a hard worker for his Company. Due to his lack of education he was unable to make drawings or plans of his work, or even issue written instructions to his workers. Every detail had to be stored in his memory. He was not unusual in this respect, many of the canal engineers being similarly equipped. (Brindley himself, for example.) On the completion of the Blisworth Tunnel and his health being drunk, Old Barnes replied to the toast, "Mr. Chairman and gentlemen, I beg to return you my thanks, and

since we are met together, and the Tunnel ended, the least said is the soonest mended."

In 1929, the Grand Junction was absorbed into the Grand Union Canal system.

LOCATION: Regents Park—Regents Canal—tunnel and bridge.

APPROACH: Since the canal skirts the northern boundary of Regents Park there is little need to give a detailed approach to so famous an area of London, north of the River Thames.

Prince Albert Road follows the curve of the canal along its North bank for over a mile, but a good place to view the canal must surely be from the Zoological Gardens. In fact the Zoo may be reached by the canal itself, as a regular Zoo Water bus service runs from Little Venice (Paddington) every day between April and the beginning of October. This trip, although without any locks, affords its passengers an opportunity to pass through a canal tunnel, Maida Hill tunnel 272 yards long, and under the historically interesting iron bridge, just beyond.

This iron bridge, then called Macclesfield Bridge, was the scene of a terrible accident in 1874. A boat, the Tilbury, loaded with 5 tons of gunpowder, exploded whilst passing under the bridge. Nothing was ever found of its crew of three, but this was not surprising as the keel of the boat itself was hurled over 300 yards away from the explosion. Cages in the Zoo were shattered allowing rare and valuable birds to escape, a woman died of shock, and the Colonel of the Guards in Albany Barracks turned out his men, complete with loaded carbines, ready to face the enemy! The bridge, which was later rebuilt, is still known as The Blow Up Bridge. Incidentally, while passing under the bridge, note the rope marks—they are on the wrong side! In the rebuilding of the bridge some original parts were used and these curved pieces of iron were replaced in their reversed positions.

LOCATION: Hanwell—flight of locks and bridge.

APPROACH: Pass through Hanwell on the A.4020 towards the City. 7 miles from Uxbridge, after crossing the Regents Canal in Southall, turn right, and in less than a mile the road, Windmill Lane to Osterley Park, crosses the canal, which at this point is crossing the railway! This intersection of three different forms of transport is a very unusual occurrence.

To the left of the Three Bridges lies the Hanwell flight of 6 locks, the first great flight on the canal since its parting with the River Thames at Brentford. The locks serve to lift the waters of the canal over 50 feet in a distance of little more than ½ a mile. Unfortunately the whole flight is not visible from any one place due to a curve in the line of the canal.

This section of the canal is part of the original Grand Junction

Canal, and is of an earlier date than the Regents Canal which joins it approximately 3 miles to the west, at the British Waterways wharves at Southall.

LOCATION: Cassiobury Park—locks and bridges.

APPROACH: Leave London on the A.41 to Watford. Cassiobury Park, with its 900 acres of parkland, is in the rural district of Watford, and is well known and appreciated in the area as a beauty spot. The canal is not the only stretch of water through the Park; the little River Gade also runs close by, and it was the water in this stream which powered the mills along its banks, belonging to the Earls of Essex. Cassiobury, or Cashioberry as it was known as in the eighteenth century, was the home of the Earls of Essex. Their land bordered the Earl of Clarendon's estate which was situated beyond Grove Lane.

Everything possible was done by the Canal Company during the cutting of the canal, to site and equip the waterway in a manner which would be acceptable to the illustrious landowners. We therefore find the canal in a very beautiful and picturesque setting, and the architecture associated with it of the finest quality. The ornamental bridges are certainly worth viewing on the walk between the locks.

LOCATION: Marsworth—seven locks and reservoirs.

APPROACH: From Aylesbury, take the A.41 towards Tring. At Aston Clinton, 4½ miles from Aylesbury, turn left to Wilstone on the B.489, Lower Icknield Way, 1½ miles along this road the first reservoir will be reached (Wilstone Reservoir). The road skirts the reservoir and proceeds to Startop's End, and a second reservoir. Just before the canal bridge, opposite the White Lion, there is space for parking.

The towpath beside the canal can be reached without crossing the bridge, and immediately, the bottom lock in this Marsworth flight is visible. For those interested in looking for dates, this area of the canal abounds with them. They can be found on lock gates, sluices and buildings along the whole flight. (An interesting canal feature here is the double side ponds for each lock.)

From this first lock the other six are not visible, as the canal makes a tight, semi-circular turn, and it is only after negotiating this that the remaining locks can be seen rising up to the summit level a mile away, at the Wendover Arm Junction. For most of this distance a large reservoir, used to supply the canal with water, is on the right on the other side of the embankment above the canal. This is an area noted for its rare birds and it is well worth leaving the towpath to see this expanse of water. The

feeder from the reservoir to the canal passes through sluices near the bottom lock in the flight.

LOCATION: Near Soulbury—three locks and a bridge.
APPROACH: Leaving Leighton Buzzard take the B.488 running north to Bletchley. After 3½ miles Three Locks will be seen on the right.

The parking here is very good, as there is a service road on which cars can be parked between the main road and the canal. Walk up on to the bridge (No. 107) for an excellent view of the locks falling away, and also the little River Ouzel to the right. By walking over the bridge, access can be gained to the canal-side from the path at the end of the parapet. While under the bridge, look for rope marks dating from the time when horses pulled the barges along the canal.

Below the top lock there is a wharf and a warehouse, before the canal narrows again for the next lock. Opposite this lock on the towpath side is the Three Locks Inn. The side ponds for the locks are on this side too. The total fall of the canal through these locks is over 20 feet.

LOCATION: Cosgrove—lock, bridge and aqueduct.
APPROACH: From Stony Stratford continue for 1 mile along the A.5 (Watling Street) to Old Stratford. Turn right onto the A.508, from which the Cosgrove road leaves on the right ¾ of a mile further on. In Cosgrove follow the Cosgrove Lodge Park signs. (This Park comprises a hotel and many facilities for aqua-sports, from angling to water skiing, on the reservoirs beside the canal.)

The road to the village passes over Cosgrove canal bridge, a very ornamental and picturesque bridge, well worth a stop for closer inspection. Just beyond this bridge the road appears to run to a T junction with the signs to the Park pointing to the left. Turn right, however, and in front of you there will be the embankment carrying the canal, with some very rough, worn steps up to it on the left. To the right will be seen a narrow pedestrian tunnel passing under the canal.

Returning to the original route, the motorist will be directed by the Park signs to a right turning, and in the centre of the road are some petrol pumps. Immediately after passing these, take the right hand track by the hedge to the canal and the lock.

The lock is below the junction of the, now disused, Stratford/Buckingham Arm. Cruises along the canal in the narrow boat *Linda* are organised from the lock.

The walk along the towpath from the lock is on an embankment, and to the left, many feet below, can be seen the reservoirs and the Park. After a pleasant ten minutes walk the Wolverton

Aqueduct will be seen. It is an iron trough aqueduct, set on masonry piers and arches, and takes the canal over the Ouse valley. Walking on the towpath, across the aqueduct, and descending the steep bank, one obtains a good view of the aqueduct. At this point there is also a passage-way cut through one of the piers giving access to the other side.

There is quite a history attached to this part of the canal. Originally the canal came down into the Ouse valley from Wolverton by means of four locks and then rose again on the Cosgrove side by five more locks. In 1799, however, it was thought that the canal might suffer in times of flood in the valley, so the idea of an embankment and aqueduct was put forward. The work was finished soon after the turn of the century and everything went well until, through bad workmanship, the embankment burst in 1806, and later, after it had been repaired, the aqueduct itself collapsed in 1808. On both occasions the valley was flooded but no loss of life was reported. It is thought that during these periods of disaster the old nine locks were re-opened to allow the passage of traffic. The present iron trough is dated 1811, and it was brought into use on the 21st January of that year.

LOCATION: Stoke Bruerne—locks, weir, and Blisworth Tunnel.
APPROACH: Turn off the A.5 at Old Stratford onto the A.508 through Yardley Gobion. Four miles beyond, the road crosses the canal at bridge number 54. Just over the bridge on the right is a track leading down to the keeper's cottage and parking is available here. There are two locks here, the first in the Stoke Bruerne flight of seven. Beyond these, a short walk down the towpath, can be seen two long arched flood weirs, nearly opposite the point where the River Tove, from Towcester, joins the canal.

Returning to the car, cross the main road to take the minor road, running beside the canal, to Stoke Bruerne village. This village now boasts a Waterways Museum and is certainly worth a visit. Ample car parking facilities are available by following the signs. From the car park to the canal is a very short walk, and once on the towpath the Museum is on the left, while the hump back canal bridge and the remaining locks in the flight are ahead of you. By crossing one of the locks a closer look at the side lock can be obtained. It has been laid out as part of the Museum, with a barge slung in a weighing device, used in past times to estimate tolls chargeable on goods carried on the canals. The lock gates are of interest as they are made completely of iron, an unusual feature. This and many more details are supplied on an information board close by.

Turn away from the locks and proceed along the towpath towards Blisworth Tunnel. On the way look out for an old Grand Junction Canal Company mile post. Close by the entrance to the tunnel are some buildings which might have been used as stables in the old days of horse drawn barges. Originally the tunnel was to have started just over 100 yards to the east of the present one, and further to the west at its northern end. Unfortunately, however, due to poor design and materials, the original tunnel allowed water in large amounts to seep into the workings and it was abandoned. Thought was given then to carry the canal over the hill in a flight of 29 locks, but Rennie, who was called in to advise Barnes the engineer, decided on the new and present line for the tunnel.

Notice that the tunnel, now at 3,075 yards the longest still in use on our waterways, has no towpath. At Stoke Bruerne the barges used to pick up "leggers" (men employed to lay out on each side of a barge on "wings" and propel the craft by pushing their legs along the walls of the tunnel). It has been said that a fully loaded barge would take 2¼ hours to be "legged" through Blisworth Tunnel.

Prior to the opening of the tunnel in 1805, the Canal Company had laid a double tracked, horse-drawn railway across the hill, and goods were off-loaded from barges onto the railway at Blisworth, and returned to the canal again near the bottom locks of the Stoke Bruerne flight.

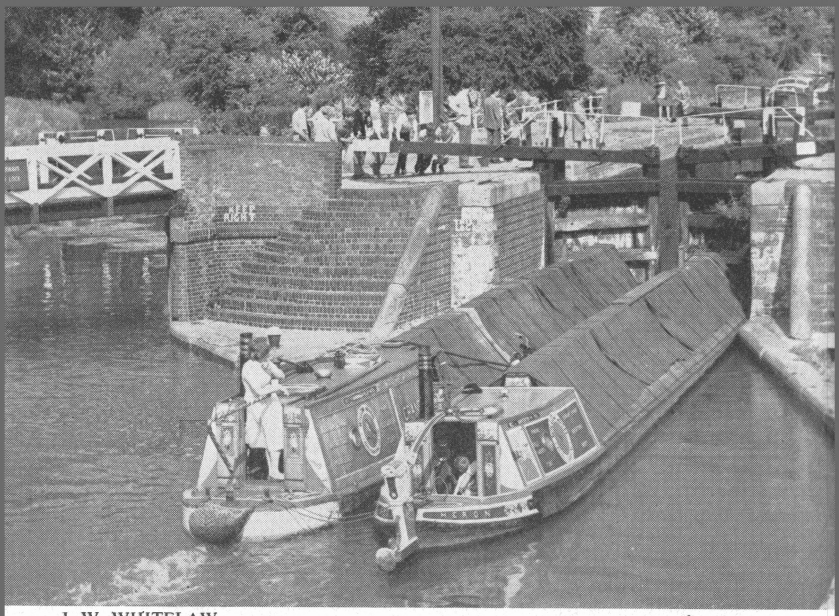
When this railway was no longer required here it was taken to help with the building of the Wolverton embankment and aqueduct.

The museum presents many aspects of canal history. Jack James who takes your money at the door was born on the water in Victoria's reign. What he cannot tell you about canals is hardly worth the telling. The museum is housed in an old corn mill which has three floors. It is full of canal relics of many kinds and like all good museums you need much more than a single visit to explore its well arranged galleries. Every aspect of canal life may be found here including the coveted Measham teapots—the supreme status symbol among canal womenfolk; eel spears; goffering irons; lace; weed cutting scythes, and painted nosetins for the horses.

This fascinating home of canal lore is closed only on Christmas Day and Boxing Day. The opening hours are: 10.0 a.m. - 12.30 p.m.; 2.0 p.m. - 5.0 p.m., and (from the first Sunday in March to the last Sunday in October) also 6.0 p.m. - 8.0 p.m. Admission: Adults, One Shilling; Children, Sixpence. Address: The Curator, Waterways Museum, Stoke Bruerne, Towcester, Northants. Telephone: Roade 229.

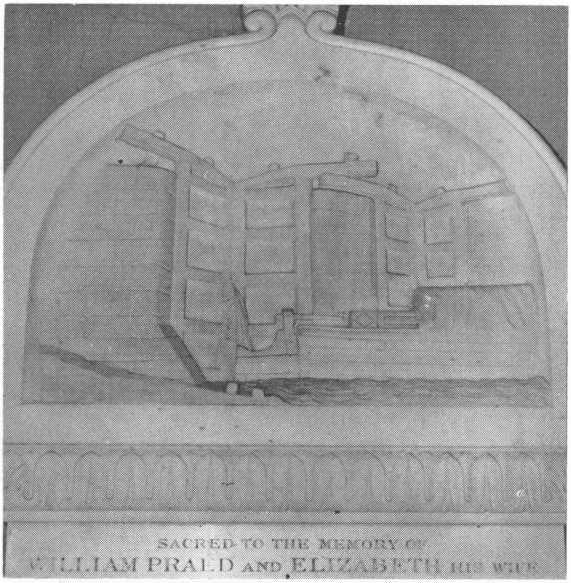
PORT OF MANCHESTER

Manchester Ship Canal: The Barton Swing Aqueduct, a unique example of engineering skill.



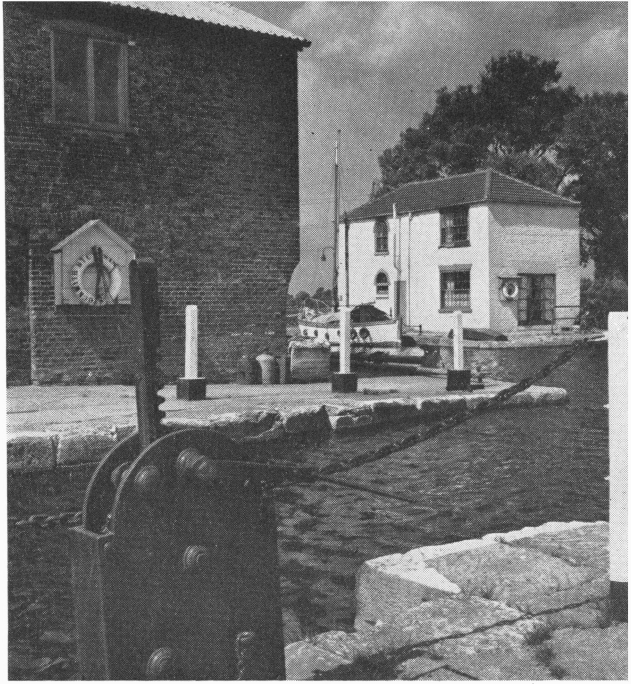
J. W. WHITELAW

Grand Union Canal: Entering Rickmansworth Lock.



IVAN BROADHEAD

Grand Union Canal: Memorial to William Praed in Tyringham Church, Bucks



A junction on the Sharpness & Gloucester Canal

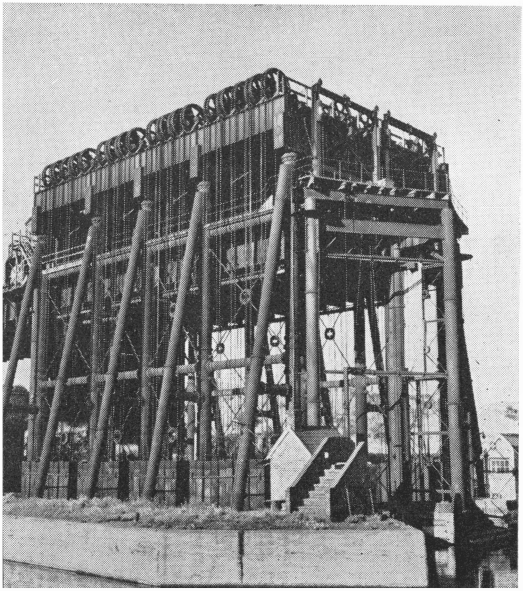
BRITISH WATERWAYS BOARD

Canal art: Castles painted in the traditional manner.

J. N. T. VINCE

Kennet & Avon Canal: Bridge at Newbury, Berks, with classical detail.

BRITISH WATERWAYS BOARD



River Weaver: The Anderton Lift.

AEROFILMS

Kennet & Avon Canal: The staircase of 29 locks at Devizes, Wilts.

Grand Union Canal: Stoke Bruerne, Northants.
Note the painted bridges and the barge in a weighing lock.

Grand Union Canal: A toll house at Braunston.

J. N. T. VINCE

J. N. T. VINCE

Grand Union Canal: Braunston, cast iron bridge made at Horsley Iron Works.

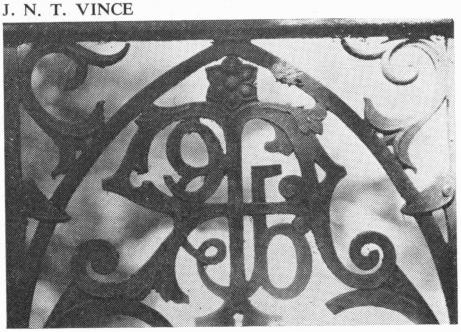
Grand Union Canal: Bridge with Gothic decoration carved by local masons at Cosgrove, Northants.

J. T. N. VINCE

Wendover Arm, Grand Union Canal: The pumping station at Tringford, with (below right) its doorway decorated with the cast iron pillars and iron balls from the original beam engine, 1803-1927.

Wendover Arm: Left, a typical mile post in cast iron, and below, detail of cast iron bridge with de Rothschild monogram, seen in reverse.

J. N. T. VINCE



LOCATION: Braunston locks and tunnel.

APPROACH: Drive north west from Daventry on the A.45 for approximately 4 miles, to Braunston village.

In Braunston the Blue Line Cruisers yard and canal area will be seen on the right. Continue along the main road until there is a junction on the right. Turn and follow the minor road up into the village. (The junction between the Grand Union and the Oxford Canal is further along the main A.45 on the left, behind a new factory.)

Near the top of the hill, in Braunston village, can be seen the Church and close by an old windmill which is now a residence. Further on towards the far end of the village, look out for a lane called "Dark Lane" on the right. This goes down to the canal and bridge No. 4. There is plenty of parking space on the verges here. The public house, The Admiral Nelson, also offers car parking facilities.

Below the bridge are two of the locks in the flight of six, the remaining four being above the bridge on the walk to the entrance to Braunston Tunnel.

As with most major engineering feats, Braunston Tunnel was troubled by financial, physical and human difficulties. Initially running sands hampered the work, but finally a human error in aligning the canal caused it to have an S-bend in it. The tunnel which is 2,049 yards long was opened in 1796.

THE GRAND UNION CANAL
(Norton Junction to Kibworth Locks)

The section of the canal south to Foxton, including the short Market Harborough Arm, was originally part of the Leicestershire and Northamptonshire Union Canal. The remaining section to Norton Junction was the original Grand Union Canal. In 1894 they amalgamated with the Grand Junction Canal Company and in turn were absorbed by the new Grand Union Canal Company in 1932. The canal was opened in 1814.

LOCATION: Watford—flight of locks.

APPROACH: Leave Northampton on the A.428 towards West Haddon. In eight miles turn left onto the B.5385 through Long Buckby to Watford. Continue through the village and over the M1. Park here, before crossing the railway, and walk in a northerly direction along the canal towards the Watford flight. (Alternatively, continue to the A.5 and turn right, and in half a mile the flight will be seen on the right.)

This is an interesting section of the canal, the flight having seven locks which give a rise of over 52 feet. There is a staircase of four locks amongst the more usual type, but all the locks have side ponds, and there are three lock houses on the flight.

LOCATION: Foxton—flight of locks, site of lift and Market Harborough Arm.

APPROACH: Leave Market Harborough on the A.427 to Lubenham. In Lubenham turn right for Foxton, but before entering the village bear round to the left and continue along the road towards Gumley, until it crosses the canal at bridge No. 60.

The towpath is on the far side of the bridge on the right hand side. Walk along the towpath to see the Foxton flight of ten locks with a total fall of 75 feet. These locks all have side ponds, and between locks 12 and 13 notice the meeting pond which allows boats to pass each other. It takes about 1½ hours to negotiate the full flight of locks. For this reason efforts were made in 1900 to speed the process up by installing a lift. On the opposite bank it is possible to see the old arm which led off the canal to this lift.

The lift worked on an inclined plane principle, the boat being floated into one of two tanks on rails. A wire rope connected the two tanks, via a pulley and a steam-driven winch. The lift worked successfully, but it was expensive to power and maintain, a head of steam having to be kept up at all times, whether the lift was in use or not. It ceased working in 1910 or 1912, was dismantled in 1926 and sold sometime later for £250. Apart from the economic side, the lift was an asset, to users of the canal, as it cut down the time from 1½ hours working through the locks to under 20 minutes on the lift.

At the bottom of the flight is the Market Harborough Arm, which is still navigable. It is 5½ miles long and contains no locks.

LOCATION: Saddington—tunnel. Kibworth—locks.

APPROACH: From Foxton travel to Gumley and then on to Smeeton Westerby. Turn left here towards Saddington. Three quarters of a mile along this road is bridge 72.

The towpath is on the near side of the canal, and a short walk will lead to the entrance of Saddington tunnel, which is half a mile long. An old story tells of a woman having her head chopped off whilst negotiating this tunnel, and to this day her ghost, headless of course, is supposed to haunt it!

Drive on to the village of Saddington, and then through Fleckney. Half a mile beyond the village bear right, and at the cross-roads turn right again. In 1½ miles the canal will be

reached at Kibworth Bridge. There are three locks to the south of the bridge and two to the north. These are the first wide locks on this canal and there are 35 more between these and the River Trent.

THE OXFORD CANAL

The Oxford Canal was one of Britain's early canals and was cut from Oxford northwards to join the Grand Junction (now the Grand Union) at Braunston, and further north to join the Coventry Canal at Hawkesbury Junction. The Coventry Canal, in turn, linked with the Trent and Mersey Canal at Fradley.

Before the opening of the Grand Junction the Oxford Canal was the main route to the south and London, via the River Thames at Oxford.

The Canal was begun in 1769 and completed in 1790. Most of the surveying and the early work was done by Brindley, and after his death it was carried on by his assistant, Samuel Simcock. After the opening of the Grand Junction the southern section, below Napton, lost most of its trade, and for this reason it still retains its meandering, contour-controlled route favoured by its surveyor Brindley, who invariably endeavoured to avoid "locking" wherever possible. The northern section has lost some of its character through shortening and straightening schemes, which were undertaken between 1829 and 1834.

LOCATION: Lower Heyford—drawbridge and watermill.

APPROACH: Leave Oxford on the A423 through Kidlington towards Banbury. At Hopcroft's Holt, turn right at the cross roads on to the B.4030 to Lower Heyford. Along this road the River Cherwell is crossed and then the railway and the canal close together. Turn left at the cross roads, and the village road (Station Road) cuts back towards the canal. A quarter mile down this road on the right is Mill Lane.

At the bottom of this short, narrow lane is bridge number 205, which is unique in that it is the only iron drawbridge in the country. The only non-iron parts of it are the wooden boards forming the roadway, and they will support a medium-sized family car!

Immediately over the bridge is the mill, an impressive building of Cotswold stone, and of very early origin. It was in existence before the Norman Conquest and was mentioned in the Domesday Book. Not surprisingly, it was found necessary to rebuild it in 1800, but it continued functioning as a mill until

1946. In former times its owners were contracted to supply the Lord of the Manor with 900 eels a year from the River Cherwell, which flows by on the other side of the mill.

LOCATION: Allen's lock.

APPROACH: From Lower Heyford, turn left to take a northerly direction for 1 mile to Upper Heyford. The road skirts the edge of the village. Take the second turning on the left, down High Street, and at the junction turn right down Allen's Lane. This lane continues straight on through a gate and then across a field. Park near the gate and follow the left fork in the lane some 50 yards down to bridge 204.

The towpath is on the far side of the bridge and the lock can be seen over the right parapet. This is a pleasant spot away from the village, with the little River Cherwell meandering very close to the canal, as it does for much of the canal's length. Just above the lock, which has a fall of 5 feet, is an overflow weir very popular with the canal's fish population, judging by the way they line themselves along it facing upstream! There is a bridge (No. 203) a short distance away above the lock, which enables a circular tour to be made to return to the car.

LOCATION: Claydon locks.

APPROACH: Proceed north from Banbury on the A.423 for 5 miles. Then turn off right down a lane signposted to Claydon. Turn right in the village by the church, and remain on this lane until the canal is crossed at bridge number 145. Good parking is available just over the bridge on the right.

Here are five locks, three to the north and two to the south of the bridge. Combined they change the level of the canal over 30 feet. The locks are quite well spaced, covering a distance of about three quarters of a mile, but it is an interesting walk, well away from any habitation.

LOCATION: Fenny Compton "Tunnel".

APPROACH: 8½ miles north of Banbury on the A.423, a new road bridge has been constructed over the railway and the canal, which appears to be in a deep cutting. There is parking available off the main road on either side.

Fenny Compton "Tunnel", as it is still called, ceased to be a tunnel in 1868 when the top was taken off it, because it was decided that it would be too expensive to repair. It is a straight length of 1,188 yards, all of which can be viewed from the new bridge. Looking over the north-west parapet of the bridge, two other bridges are visible. They are numbers 137 and 137a.

The latter is a delightful open, iron footbridge intended for use as a roving bridge, as the towpath changes sides at this point. In the absence, during recent times, of horses' hooves and boatmen's boots tramping over it, it has now become a grass path, which serves to improve its picturesque quality.

Over the other parapet can be seen bridge No. 139 and up on the high land on the left, out of view, is Wormleighton reservoir with its feeder into the canal.

THE STRATFORD-ON-AVON CANAL

This canal was built in two sections, the first started at Kings Norton Junction in November of 1793, the contractors being paid approximately 5d. a cubic yard for picking and shovelling the canal out. By 1796 the section through to Hockley Heath was completed and opened. At this point the money, as often happened on these canal projects, ran out. The labourers on the canal were now getting worried about their lack of pay, and a meeting was called at Hockley, where the Canal Committee promised them immediate payment. Soon after the meeting the treasurer of the Canal, George Perrott, was asked to lend £100 for the payment of the labourers. At this time the Company already owed its treasurer over £6,000!

By 1802 the route through to Kingswood, and the junction with the Warwick and Birmingham Canal (now part of the Grand Union), had been completed. Finally the canal was cut through to Stratford and the whole length of 25½ miles was opened in 1816. It seems to have been used mainly to carry coal to Stratford and also as part of a through route from Dudley via Kingswood to London.

After railway ownership in 1856, the life of the Stratford-on-Avon Canal began to ebb away. More and more of its goods were being carried by the railways and consequently less work was available for the boatmen and their families, and so the canal began to silt up, locks became overgrown and their gates rotted on their hinges. With the threat of abandonment hanging over the canal, in 1960 such organisations as the Inland Waterways Association and the Stratford-on-Avon Canal Society, formed a protection society. When the National Trust obtained an option on the lease of the canal, magnificent efforts were made to rejuvenate it. Volunteers came from all over the country supplying labour and funds. Servicemen helped with this work as training exercises and labour in the form of working parties of prisoners from Winson Green Prison, all helped in the re-opening of the canal. The re-opening ceremony

was carried out by the Queen Mother on 11th July, 1964. The National Trust has now taken over the freehold of the canal.

LOCATION: Bearley (or Edstone) aqueduct.

APPROACH: Drive for 4 miles out of Stratford-on-Avon on the A.34 towards Birmingham. After passing under the railway bridge, turn left in a quarter of a mile. Half a mile along this road you will pass under another railway bridge bringing into view the Bearley aqueduct. Parking is available on a patch of ground on the left, just before the aqueduct. A spinney by the parking area hides two routes up to the towpath. Go through the gap in the hedge and climb up the path until it forks, keeping left here up the rough "staircase". (If the ground is at all wet this is the only safe route to the top.)

The aqueduct is of the iron trough type, but its design is of a very early form, in that the towpath is attached to the side of the trough rather than being an integral part of it, as we shall see later at the Pontcysyllte aqueduct. This gives the trough the appearance of being extremely narrow, as indeed it is. This was one of the disadvantages of this type of aqueduct.

Notice at each end of the trough the slots used for locating the timber planks to hold back the water on the occasion of a leakage, or for repairs on the trough. The aqueduct carries the canal over both the road and the railway at this point.

LOCATION: Wootton Wawen—aqueduct, divided bridge and wharf.

APPROACH: 6 miles along the A.34 from Stratford-on-Avon towards Birmingham, you will pass the Navigation Inn on the right (with car park for patrons) and then drive under the aqueduct. Notice the inscription on the plaque overhead. Immediately after passing under the bridge, turn left along Pennyford Lane and proceed for a quarter of a mile. On the left you will see, by a lane, the green post which should carry the sign "Public Footpath" but the sign is missing. Park in a convenient spot and walk up the lane.

This short, cobbled track will lead you to the bridge and the towpath. These divided bridges are a canal feature which allowed the towing rope between horse and boat to pass through the 1½in. gap, to save the necessity of having to disconnect the two before negotiating the bridge, and reconnecting afterwards. Because of the narrowness of the gap and the lumbering gait of the horse, the rope rarely passed cleanly through the gap, and as a result the rope, by constant rubbing over a long period, has left many a deep cut in the iron-work of the bridge. These marks are still clearly visible.

To gain access to the iron trough aqueduct, walk left along the towpath from the bridge. Beyond the aqueduct, on the opposite bank of the canal, is the rear of the Navigation Inn and the wharf. A closer inspection of the latter can be made from the rear of the Inn.

LOCATION: Lapworth—flight of locks, roving bridge and barrel-roofed cottage.

APPROACH: Leave Birmingham on the A.41 towards Warwick. After 13 miles, and having passed through Chadwick End, turn right. 1½ miles along this road the Grand Union Canal is crossed, and in a further quarter of a mile turn left. Proceed down this road, beside the railway for one mile and turn right under the railway on to the B.4439 and then over the Stratford-on-Avon Canal. Immediately over the bridge turn left down Brome Hall Lane, where parking is available.

On the left at the bottom of this lane are the National Trust workshops (owners of the southern section of the Stratford-on-Avon Canal). A footpath is available to the canal beside these workshops. It is signposted. Beside the canal on the right is the toll office and ahead is a divided, roving bridge. The divided centre section shows rope marks and also more recent strips of metal to strengthen it, so deep were the cuts made by the rope. A roving bridge is so named as it is used to carry the towpath from one side of the canal to the other. On this bridge is a plaque giving information about the re-opening of the canal.

From this bridge there are features of interest in both directions along the towpath, including the arm forming the junction with the Grand Union Canal. To the north is the Lapworth flight of 19 locks, altering the height of the Stratford-on-Avon Canal well over 100 feet in a distance of approximately 1½ miles. (Take note of the arrangement of the gates on this flight.) To the south between locks 21 and 22, is a barrel-roofed canal cottage peculiar to this part of the canal. Alongside lock 22 is a dry dock, which can also serve to change the level in the whole pound on this stretch of the canal.

LOCATION: Kings Norton—guillotine gates, swing bridge and tunnel.

APPROACH: Leave Birmingham on the A.441 towards Redditch. After this road has crossed the Worcester and Birmingham Canal, take the left turning to Lifford. Half a mile down this road the Stratford-on-Avon Canal is crossed at bridge No. 1. Just over the bridge on the right is a limited parking space.

Access to the guillotine gates and the towpath is made from the far end of the right parapet of the bridge. The gates will be

found in the open position, as they have been since the waterways became nationalised. Originally they were intended to form a stop lock, separating the water of the Stratford-on-Avon Canal and the Worcester and Birmingham Canal, the junction of which is 200 yards away to the west. Notice in the lock walls the slots for the stop planks, and on the far side of the canal the trestle on which these planks normally rested when not in use.

Walking a quarter of a mile to the east, away from the road bridge one can find a swing bridge and three quarters of a mile further the entrance to Brandwood Tunnel. This is 350 yards long and is without a towpath. In days gone by the boats were hauled through it by the boatmen heaving on a fixed handrail. The facing of the tunnel entrance is of red brick and sandstone. Look for a plaque with laurel sprays and Shakespeare's head!

THE WORCESTER & BIRMINGHAM CANAL

The 30 miles of canal from Worcester, to link with the Severn Navigation, and with Birmingham (the junction of many canals covering the whole country), had its usual physical and financial difficulties. It was begun in 1791 and not completed until 1815. From our point of view the physical difficulties are the more interesting, and these were based on the necessity of having to raise the canal up on to the Birmingham Plateau through 58 locks and five tunnels.

Locks are expensive items in canal expenditure and when the Worcester and Birmingham Canal Company were faced with providing for thirty in the Tardebigge flight, it was natural that they should attempt to seek some alternative. The only alternative was a lift, in this case a vertical lift through 12 feet, invented by John Woodhouse. The experimental lift was set up where the top lock of the Tardebigge flight now is. It was a large wooden tank, big enough to carry a narrow boat and its water (this combined weight was 64 tons). The whole thing was counterbalanced, through overhead wheels and chains, by a platform loaded with bricks. The experiments were successful, and lifts of 2¼ minutes were achieved. But when Rennie was called in to give advice, he decided that the maintenance of the delicate machinery would be too expensive, and it would require too much careful attention. The experiment was therefore abandoned and locks were completed throughout the flight.

LOCATION: Tardebigge—two flights of locks, tunnel and a reservoir.

APPROACH: Leave Birmingham on the A.38 towards Bromsgrove. In Bromsgrove turn left on the A.491 to Tutnall, two miles away. At the far end of the village, turn right towards Grimley Hall, and in three quarters of a mile turn left along Grimley Hall Road (signposted).

This lane deteriorates as it gets closer to the canal, and it may be necessary to park the car 150 yards or so short of the canal, by the cottage on the right, and complete the journey on foot. The lane leads on to the old canal bridge number 54, and the lock beside it is about a third of the way down the flight. Cross over the bridge to gain access to the towing path and the reservoir over the embankment. From the top of the embankment there is an excellent view over the surrounding countryside and, of course, the lower section of the flight of 30 locks.

This flight is the longest in the country, having a total fall through its locks of 217 feet in a distance of 2½ miles. Immediately below this flight is Stoke flight, with another six locks and a further fall of 42 feet.

By walking in the opposite direction, towards Birmingham you will pass between the canal and the reservoir, which acts as a feeder for the canal. The old pumping station is situated just to the north of the reservoir near the canal. Soon after passing the top lock of the flight (the scene of the lift experiments), the Tardebigge tunnel entrance will be seen. The tunnel is 580 yards long and without a towpath.

THE STAFFORDSHIRE & WORCESTERSHIRE CANAL

Under the name Wolverhampton Canal, this was opened for trade in the year 1772, having been built by the famous James Brindley. In its heyday it was a very busy route, linking with the Trent and Mersey Canal, the Shropshire Union Canal, and the Severn Navigation at Stourport, a town which owes its existence to the Canal.

Its trade consisted of hardware from the Black Country and coal from South Staffordshire and Cannock Chase coalfields. Its later history is somewhat unusual in that it was never controlled or owned by the railways, but was taken over by the British Transport Commission in 1948.

LOCATION: Austcliffe—hanging rock.

APPROACH: Take the A.449 Wolverhampton road out of

Kidderminster for five miles, and turn off to the left where the second signpost to Cookley indicates that the village is half a mile away. Less than half a mile down this lane another lane crosses it. Turn right and park near the farm entrance.

Walk down the sloping lane past the "no cycling" notice and in a matter of yards you will find yourself on the old canal bridge, number 24. On the parapet of the bridge, amongst the carved hearts and names, are some curious scalloped cuts. Under the arch of the bridge there are some good tow-rope marks.

To the left of the bridge is the famous hanging rock, looming ominously over the canal. The rock in this area has a deep red hue, and judging by the amount of carving on the rock face, it is quite soft!

Under the towpath, opposite the hanging rock, is a weir taking surplus water from the canal and allowing it to fall into the little River Stour which meanders close by.

LOCATION: Whittington—lock and bridge.

APPROACH: From Austcliffe, return to the main A.449 road and turn left, and two miles further on turn left on to the road to Kinver. A quarter of a mile down this road is Whittington Bridge No. 27. The lock is on the right of the bridge.

This is pleasant countryside and it is worth while taking a walk along the towpath past Whittington lock, which incidentally lowers the canal by almost ten feet, to Whittington Horse Bridge, a quarter of a mile ahead. This bridge leads by way of a public footpath, behind a cottage, to The Whittington. This establishment is now an inn but the house itself is steeped in history. It was built in 1300 and was owned by Dick Whittington's grandfather. Later it was owned by the Grey family, and Lady Jane Grey, who in 1553 had the misfortune to be proclaimed Queen, passed some of her childhood here. Queen Anne also stayed here, and evidence of this can be seen on the main door. The house also has secret rooms, tunnels, staircases and chapels —a place worth a visit even if it does take one a little away from the canal.

LOCATION: Kinver—lock, bridge and cave dwellings.

APPROACH: After leaving Whittington Bridge drive the 1½ miles into Kinver by continuing along the minor road. Take the second turning on the right and the bridge, called Kinfare, will be in view ahead.

This bridge, No. 29, and the lock to the left of the bridge, are the limits of the Whittington pound, the beginning of which has just been visited. Access to the towpath can be gained from

beside the right hand parapet of the bridge on the Kinver side. The lock here has a fall of over seven feet. By taking a walk along the towpath back towards Whittington, cave dwellings, which were inhabited by canal families until the turn of the century, can be seen among the trees.

LOCATION: Dunsley—tunnel.

APPROACH: From Kinfare Bridge at Kinver, travel for a mile along the Stewponey road. At this point Dunsley Hall should be passed, and immediately beyond is a white, five-barred gate leading into a field. Park near this.

The tunnel and the canal are at the bottom of this sloping field. The tunnel is only 25 yards long, with a farm track passing over it, but clothed as it is in trees and bushes, and with its dark mouth swallowing the canal waters, it has an air of mystery about it. It was close by here, at the beginning of the nineteenth century, that the Lord of the Manor was returning to Dunsley Hall from Kidderminster, with his purse well lined with money, when he was attacked, beaten up, robbed and left for dead. He managed, however, to drag himself back to his stately residence and give the alarm before his end came. The highwayman was apprehended whilst drinking some of his loot away in the Whittington Inn. He was later publicly hanged and gibbeted at Gibbet Wood, which is by the canal a quarter of a mile to the north. He was the last man in England to be so punished.

LOCATION: Bratch—locks and octagonal toll house.

APPROACH: Leave Tipton on the A.457 to Sedgley. In Sedgley take the A.463 through Gospel End. Two and a half miles from Sedgley this road joins the A.449 at some cross roads. Cross the main road and take the minor road towards Trysull. A quarter of a mile after passing under the railway, the Bratch canal bridge is reached.

This bridge is No. 47 on the canal and gives access to the towpath on the Trysull side. There are three locks here and, though not a staircase, the pounds are very short between the locks. This gives the canal a sharp rise of over 30 feet within a very short distance. The bridge, separating the top lock from the bottom two, is Upper Bratch Bridge, a roving bridge allowing the towpath to change sides. Another interesting feature at this location is the handsome octagonal toll house.

THE LLANGOLLEN CANAL

The Llangollen Canal had its inception at Ellesmere, Shropshire, where a group of businessmen, having noted the success of other canals in the area, engaged Telford to design and construct a canal system radiating from their town linking the Rivers Severn, Dee and Mersey.

The first Act, passed in 1793, allowed a canal to be cut from Shrewsbury (on the Severn) through Ellesmere, Chester (on the Dee) and on to Netherpool (now Ellesmere Port) where it would join the Mersey. Numerous branches to this main line were also permitted.

As time went by, it was natural that the Ellesmere Canal Company should amalgamate with other canal companies having canals linking with their own. In 1813 they joined with the Chester Canal Company and, in 1845 this joint company took over the Birmingham and Liverpool Canal Company, and with this came the new name of the Shropshire Union Railway and Canal Company.

An Act is still in force on these canals which threatens transportation for seven years to anyone damaging the Company's works or property!

LOCATION: Grindley Brook—staircase of locks.

APPROACH: Leave Shrewsbury on the A.528 and then take the A.5113 to Wem, approximately 12 miles to the north. Continue on this road through Wem to Whitchurch, a further nine miles. Leave Whitchurch on the Chester road, the A.41. In one and a half miles the road crosses the canal and parking is available.

From the bridge, No. 29, the locks can be seen on each side. To the north are three locks of the usual type, with separating pounds, while on the south side there is a staircase of three locks rising sharply up. The six locks raise the canal nearly 40 feet.

Notice the sharply defined brick sets for making a good foothold, whilst heaving the body against the balance beam when opening or closing the lock gates. Here also is a fine, rope-worn bollard. Near the top of the staircase is a round toll cottage.

LOCATION: Chirk—aqueduct and tunnel.

APPROACH: Leave Whitchurch on the A.525 road towards Wrexham. After five miles turn left on to the A.539 through Hanmer and Penley to Overton. Leave Overton on the A.528 and in one mile branch right onto the B.5069 to St. Martins.

At the far end of the village turn right and in one mile the A.5 will be reached, turn right and proceed for a further mile along this road.

For over half this distance the canal is close by the road on the left. As the A.5 drops down into the valley of the River Ceiriog, the magnificent Chirk aqueduct can be seen away to the left and, behind and above it, the viaduct carrying the railway. The aqueduct was built 150 years ago (the viaduct some 40 years later) and is made up of iron plates bolted together forming a trough and towpath. It rests on masonry supports and has ten well-proportioned arches. The aqueduct sweeps across the valley at a height of 70 feet.

Another position from which to view the aqueduct, before going down on to the towpath, is gained by continuing along the A.5 up out of the valley. Near the top, on the left, is a sign directing you to Chirk Castle (B.4500) turn along this road and drive for about a mile, and from this area, looking down the valley, a view of the opposite side of the aqueduct will be obtained.

To get down on to the towpath retrace the route for about half a mile, when a turning on the left again indicates Chirk Castle. A few yards beyond this on the right is a very narrow lane with limited parking space. Walk down the fairly steep slope on to the towpath. Ahead is the trough aqueduct with its towpath (the view from here is well worth seeing) and to the right is the tunnel. This has a good towpath throughout its length of 460 yards, the tunnel eventually opening out at the far end into a mile-long cutting.

LOCATION: Pontcysyllte—aqueduct.
APPROACH: Continue along the A.5 from Chirk towards Llangollen. In Pontcysyllte, fork right on to the B.5434 just before the Aqueduct Inn. Drive down into the valley, taking great care at the bottom where a long, narrow bridge is negotiated. From this position an excellent view of Telford's masterpiece is obtained. The aqueduct is over 1,000 feet long and crosses the Dee on 18 slender masonry piers. When passing over the river the aqueduct is 121 feet high. The trough is similar in construction to the one at Chirk and is, of course, about the same age.

From this point some exploring can be undertaken. Up to the left, over a road which is liable to subsidence, is one end of the aqueduct, and the old Ruabon Arm (now out of use), and to the right near the A.5, is Fron Bridge, a swing bridge, which gives access to the towpath across the aqueduct. There is also a lengthy inscription to be found on a cast-iron plate, set into one of the

aqueduct's piers on the occasion of the opening ceremony on 26th of November, 1805.

LOCATION: Horseshoe Falls.

APPROACH: Continue along the A.5 through Llangollen. Two miles beyond the town turn right (not down the road to Horseshoe Pass) on to a railway bridge. Park in any available space beyond the bridge. From this position a good view can be seen over into the valley on the right. There are paths here giving access to the Falls themselves.

The Horseshoe Falls were engineered by Telford in 1830 to hold back a minimum head of water upstream on the River Dee, and they have provided, through the valve house on the opposite bank, a constant supply of water for the canal.

THE SHROPSHIRE UNION CANAL

This canal was constructed in four distinct phases spaced over a period of some 35 years. The earliest section, between Chester and Nantwich, was cut by the Chester Canal Company around 1774. The line was extended north of Chester just before the turn of the century, by the same Company, to give an outlet to the sea by joining the River Mersey at Ellesmere Port.

About 30 years later the Birmingham and Liverpool Canal Company obtained permission to extend the canal south from Nantwich to Autherly and thus a junction was formed with the Staffordshire and Worcestershire Canal. This meant that by 1830 the River Mersey and the River Severn were linked by canals, so there now existed two major exits for manufactured goods and raw materials.

The final development of this system was to cut a linking canal between Barbidge, on the Shropshire Canal, and Middlewich, on the Trent and Mersey Canal, and this occurred in the early 1830's. By this time, however, the Chester Canal Company had amalgamated with the Ellesmere Canal Company, forming the Chester and Ellesmere Canal Company. In 1846, after further amalgamations, the Shropshire Union Canal Company emerged, and at last the whole canal was united under its present title The Shropshire Union Canal.

LOCATION: Beeston—iron lock and several other locks.

APPROACH: Leave Whitchurch (Shropshire) on the A.49 towards Warrington. After 12 miles (3 miles before Tarporley) pass under the railway bridge, and 150 yards ahead is canal bridge No. 107. Parking is adequate beside the road on the far side of the bridge.

From this position Beeston iron lock can be seen a short distance along the towpath to the right. A closer inspection of the lock will show that the chamber is lined throughout with iron plates bolted together. This was necessary because the lock was built on running sand.

From here the lock house for the Beeston stone lock can be seen as the canal negotiates a bend. The stone lock here is of the conventional type. Further along the canal is Tilstone lock and then Bunbury lock, which is of the two step staircase type. This lock is also worthy of note as it was a change-horse station during the era of horse-towed boats and the canal stables can still be seen.

LOCATION: Audlem—locks and bridge.

APPROACH: Proceed from Stoke-on-Trent, through Newcastle-under-Lyme and then on the A.525 through Madeley to Audlem. (This journey is approximately 15 miles.) After crossing the canal bridge in Audlem, turn left onto the A.529 and proceed for one mile to a turning on the left to Cox Bank. Almost immediately fork left into Baggley Lane. A short distance along this lane is Baggley Lane Bridge, over the canal. Park on the left on the far side of the bridge.

Many of the locks in this flight of 15 can be seen from the bridge. The majority lie to the north, back towards Audlem, but three can be viewed by walking to the south towards the top lock. This flight raises the canal almost 100 feet in approximately one and a half miles. Look out for rope marks on this flight, and also for overspill weirs beside the locks.

LOCATION: Adderley—locks and Betton Coppice Bridge.

APPROACH: From the A.529 from Audlem to Market Drayton turn off left to Adderley. This road follows the railway line closely for three quarters of a mile and then passes under it. About a quarter of a mile on is Adderley Wharf Bridge over the canal. The towpath is gained from the far side of the bridge.

This is the top of the Adderley flight of five locks all within a very short distance. Together they lift the canal over 30 feet above the top level of the Audlem flight.

Having investigated this flight of locks, return to the bridge and take a walk along the canal to the south. The second bridge in this direction is a very graceful little roving bridge, with the delightful name, Betton Coppice Bridge. It takes its name from the nearby wood which, the locals say, is famous for its shrieking ghost. It is also said that no boatman would ever stop his boat in the tree-lined cutting at night for fear of the ghost!

LOCATION: Stretton—aqueduct.

APPROACH: Leave Birmingham on the A.34 towards Cannock. Two miles south of Cannock turn left onto the A.5 towards Shrewsbury. Proceed along this road for seven miles.

In this area the canal flows over the road by means of Stretton aqueduct, which is made of cast iron. Telford designed and built it, and it was opened in 1832.

This point on the road is supposed to be the halfway place between Holyhead and London, each being 130 miles away in opposite directions. Telford had been in charge of this road development some twenty years before the completion of his aqueduct. The result is Telford's trough over Telford's trunk!

THE TRENT & MERSEY CANAL

This canal, linking the Rivers Trent and Mersey and passing through the industrial heart of England was cut at a crucial time in our history. The first section to be built between the Trent Navigation and Great Haywood Junction (to join the Staffordshire and Worcestershire Canal) was completed by 1772. At this time the industries of the area, especially Josiah Wedgwood's potteries, were developing rapidly. Yet the movement of their goods to the markets and ports was, to say the least, extremely hazardous and expensive, along the poor unmade tracks of pre-canal times. Once the canal was open, goods could be moved to the ports safely and surely, and on the return journey the boats could be loaded with the raw materials required by the inland industries.

Although Brindley, the canal's engineer, died in 1772 and never saw its completion, his views, together with those of Wedgwood, on what the canal would do for the nation, were certainly fulfilled. He was right to name it "The Grand Junction Canal".

LOCATION: Anderton—lift.

APPROACH: Leave Warrington in a southerly direction on the A.49. Travel for about eight miles till the A.533 crosses the A.49 and turn left towards Barnton. At Barnton the road to Northwich crosses the canal and then turns left to follow it before crossing the River Weaver. Where the road begins its approach to cross the river, turn left and proceed between the river and the canal towards Anderton. The road re-crosses the canal at bridge No. 200 and Anderton lift is away to the right at the end of a short arm off the canal.

Anderton lift, which first became operational in 1875, is the only one which is still working in the country and is of the

vertical lift type. It raises the boats over 50 feet from the River Weaver into the Trent and Mersey Canal, and since 1908 has been powered by electricity. It was, however, originally designed to work as a counterbalanced lift (like Hoffnung's character on a building site who had trouble with the barrel of bricks being heavier than himself!), having two caissons (tanks), in which were carried boats and their water, the one at the higher level being heavier than the lower one. The heavier, higher one descended and, by the counter balance design, raised the lower one. Nowadays, with their independent power supply, the caissons can be raised or lowered individually.

LOCATION: Wheelock—flight of eight locks.
APPROACH: Proceed on the A.533 from Anderton through Northwich and Middlewich to Sandbach. Turn right onto the A.534 and drive for 1½ miles to Wheelock. Cross both the canal bridge No. 154, and then the bridge over the River Wheelock. Just beyond the latter, turn off left on to a lane which cuts back towards the canal and arrives at bridge No. 152 and the Wheelock flight. Parking is good near this bridge.

This flight is unusual in that all the locks are double. Each single lock on the canal here has a twin immediately beside it, so that although the series of locks are counted as eight from top to bottom, if each twin is taken into account, there are really 16. The flight elevates the canal nearly 80 feet from bridge 152 to the lock house, beside the top lock.

A better indication of the amount the canal is being lifted at this point is to compare the heights of the bottom and top gates in each lock. Notice the odd arrangement of the gates.

LOCATION: Kidsgrove—aqueduct, junction and Harecastle tunnel.
APPROACH: Leave Sandbach in the Kidsgrove direction on the A.533. At Rode Heath turn right onto the A.50, and in 1¼ miles the Trent and Mersey Canal is crossed. In just over half a mile the A.34 is crossed. Just beyond these cross roads the Red Bull aqueduct can be seen overhead amongst the trees. It is an iron trough aqueduct carrying the Macclesfield Canal to its junction with the Trent and Mersey canal, which is situated ahead and to the right.

To see the junction, turn right off the A.50 before it passes under the railway just over a quarter of a mile from the aqueduct. The road crosses bridge No. 133 over the Trent and Mersey Canal with its Red Bull flight of six locks. Away to the left, half a mile along the towpath, are the Harecastle tunnels.

The old, now disused, smaller tunnel on the right is the

work of Brindley and it was begun about 1766. It is thought to be the first tunnel in the world to be cut with a length of more than a mile, in fact it is 2,919 yards long. When Brindley first decided to build the tunnel, the idea was received with scorn and derision; and yet on its completion 11 years later, after the death of Brindley, it was acclaimed as the eighth wonder of the world.

Telford completed the second tunnel, alongside that of Brindley, in 1827, having taken only three years to build it. Telford's tunnel contains a towpath, unlike the original which was a "legging" tunnel. For a time, at least into the 1860's, both tunnels continued to be used.

To view the tunnels from the other end, return to the A.34 cross roads and turn left. Remain on the A.34 for 2½ miles until a turning on the left indicates the road to Tunstall. 1½ miles down this road the railway is crossed. The road then turns away to the right at a junction and a little way down from here, on the right, are the other entrances to the two tunnels. The roving, or turnover, bridge No. 130 is not far away.

LOCATION: Swarkestone—lock and toll house.

APPROACH: Travelling south, leave Derby on the A.514. The disused Derby Canal is crossed before reaching Chellaston, the lock to the left of the bridge being Skelton lock. Nearly two miles further on the Trent and Mersey Canal is crossed at bridge No. 13. Take the first turning on the right down the lane leading to Swarkstone lock. Just above the lock, which has a rise of 11 feet, is the junction with the old Derby Canal. On the towpath side, the first building is the lock house and the next one along is the toll house. It was here that tolls were collected from boats entering the canal from the Derby Canal. During the period spanning the turn of the eighteenth century a market boat left here every Friday bound for Derby. The boat was equipped with seats and even a fireplace, and the cost per passenger for the return trip was a shilling.

Returning to the main road, drive through the village of Swarkestone and on to Swarkestone Bridge, which is about a mile long. The bridge crosses the Trent and the water meadows to the south, and legend has it that it was built by two sisters, whose lovers had been drowned whilst attempting to ford the Trent. A chapel was also erected, where priests were to pray for travellers. The bridge is about 700 years old.

LOCATION: Alrewas—locks and River Trent.

APPROACH: Leave Burton-on-Trent by the A.38 towards Lichfield. Half a mile south of Branston is a turning on the

right to Tatenhill lock, beside the water-filled gravel pits. A mile and a half on down the A.38 the road and canal run side by side. Down the B.5016 to Barton-under-Needwood is Barton lock and bridge No. 38, and at Wychnor Bridges is another lock.

The main road leaves the canal near here to cross the River Trent. In Alrewas, turn right onto the A.513 which goes back towards the canal. This is a pleasant village to explore. It has two locks, Alrewas lock and Bagnall lock. The former, to the north, is near where the Trent actually joins the canal for a short distance and then escapes by means of a weir. There is also an old water mill and, alongside it, a weir to hold a head of water for the millstream. Lady Godiva is reputed to have worshipped in the Norman church, not far from the mill.

THE LEEDS & LIVERPOOL CANAL

Both John Longbottom and James Brindley surveyed the line for this canal. Brindley, now at the head of his profession and as a consequence with many commitments elsewhere in the country, was unable to take charge of the work, and so Longbottom was given the responsibility. He began on the Leeds side through to Holmbridge, near Gargrave, and on the Liverpool side through to Newburgh. Both sections were opened for trade in the same year, 1774, in March on the Leeds side and October on the Liverpool side. On both occasions it was a time of great festivities and rejoicing with bells ringing, bands playing, the militia firing off two 21 gun salutes, large crowds cheering and a procession led by 215 workmen with tools of their trade over their shoulders and cockades in their hats.

Thirteen years went by before the last, and most difficult piece, across the Pennines, was attempted. By this time the engineer was a man named Robert Whitworth. Many years passed (as did Mr. Whitworth), before the canal was opened throughout its length in 1816. The engineer at this time was J. Fletcher. It had taken over 40 years and the skill of four engineers to complete this 127 miles long canal, which at its summit level is nearly 500 feet above sea level.

LOCATION: Bingley—two staircases of locks, and Bank Newton locks.

APPROACH: From Leeds towards Bradford on the A.657. After approximately 3½ miles turn right onto the A.657 to Shipley. From Shipley proceed to Bingley on the A.650.

Turn right off the main road in the general direction of the

station until the canal is crossed by either bridge No. 201 or 200. Below the former is the smaller Bingley staircase of three locks, and above bridge 200 is the famous Bingley staircase of five locks. The rise given to the canal by these eight locks is 90 feet, all within a very short distance.

From Bingley, continue along the A.650 to Keighley, and then turn onto the Skipton road, the A.629. In Skipton turn left onto the A.65 to Gargrave. On the main road through the village the canal is on the right, and a turning off in that direction will soon reveal the canal and its numerous locks. By continuing along the main road the canal will be crossed beyond the village near Anchor lock and Scarland lock.

To see the Bank Newton flight of locks and the Priest Holme aqueduct, take the Bank Newton road out of Gargrave. In just over one mile this passes under the railway and then crosses Priest Holme Bridge. The aqueduct is on the right carrying the canal over the River Aire. The road then follows the right bank of the canal through to Bank Newton and the flight of six locks which elevate the canal 50 feet.

LOCATION: Foulridge—tunnel and Barrowford locks.

APPROACH: From Bank Newton locks continue on down the same road through Little Stainton, West Marton and across the main A.59 to Thornton-in-Craven. Turn left along the B.6252. At the junction with the A.56 turn right to Early and Foulridge. In Foulridge, turn off to the right on the B.6251 and in a quarter of a mile fork right on to a lane which proceeds towards the entrance to Foulridge tunnel.

The tunnel is 1,640 yards long and, in 1912, a cow is said to have fallen into the canal at the far end, at Barrowford, and to have re-appeared at the Foulridge end in a state of near exhaustion. The locals were able to revive the beast only after it had consumed almost a full bottle of brandy. Inside the Hole in the Wall Inn, along Warehouse Lane, the full story, with a photograph, can be read.

Proceed along the B.6251 and before crossing the railway, turn left to Colne Edge. At the next junction at the top of the hill, turn right. It is possible, after crossing the railway and turning right again, to reach Wanless Bridge, and to walk back along the towpath to see the southern entrance to the tunnel. The towpath is on the nearside of the bridge.

Continue on towards Barrowford and the road will join the A.682. Take the first turning on the right off this road and across the bridge over Pendle Water onto the B.6250. Half a mile along here are Barrowford locks, and Swinden aqueduct, over Colne Water. There are seven locks here to alter the level 70 feet.

(continued from inside front cover)

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